

Thesis for M.D.

Notes on a recent epidemic
of Influenza.

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The Butts
Rochdale.

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During the months of April, May and June of the present year, the town of Rochdale in Lancashire was visited by an epidemic of Influenza. The epidemic somewhat resembled that which occurred in the early part of 1890, but the cases were much more numerous and the symptoms on the whole more severe.

For some time previous to the outbreak here the epidemic had been raging in the large towns of Yorkshire, especially Leeds and Sheffield. During the early months of the year the prevailing winds were from the West and South-West, but during the months through which the epidemic lasted here the wind was chiefly from the East. This most probably accounts for the spread of the disease as the towns in which it first occurred lie in an easterly direction from Rochdale, and when the epidemic ceased here it spread

in a westerly direction to Bolton and Blackburn.

In the month of April the cases were very few in number, and not at all severe; but with the advent of the East wind about the beginning of May, the epidemic assumed alarming proportions, the cases were more severe, and the rate of mortality was largely increased. As to the extent of the epidemic it has been calculated that about one half of the population were more or less affected by the disease, and the following notes are based on a sequence of 250 cases seen during the prevalence of the epidemic. It has been noticed during former epidemics, that the disease has a cyclical course, & travels from East to West, and in the present case this was true. The disease originated in Hull where it was supposed to have arisen by infection

from foreign sailors, and from that town it spread right across the country, through Yorkshire & Lancashire, till it reached Liverpool where it seemed to terminate its course. During some epidemics the larger centres of population were found to be affected by the disease much earlier than the intervening villages, but such was not the case with the epidemic of 1891, and villages and towns were visited in point of time according to their geographical situation.

Influenza is defined by Bristowe - Practice of Medicine, 5th Edition, p 147 - thus:—

"A contagious catarrhal affection of the respiratory tract, of short duration, but attended with much prostration, and occurring for the most part in widespread epidemics. The epidemic through which we have just passed differs so greatly from

the above definition, that one is led to question very much whether it was the same disease. Catarrhal symptoms were for the most part entirely absent, and when they did occur were comparatively trivial. The present epidemic might more properly be classed among the Specific Fevers, because in all cases there was a considerable degree of Pyrexia present, and more than could be accounted for by any local affection. When diseases of the Respiratory Organs did occur they came on during the course of the disease, and were then regarded as complications.

Epidemics similar to the present have been reported previously, and Dr. Garduer - Clinical Medicine pp 88-108 - records one which occurred in 1857 and which corresponds very closely with the one presently under observation.

The epidemic of 1891 resembled those described in the text books in being infectious, and once it attacked a family, it very seldom stopped till all the members had been more or less affected by it. The state of the weather seemed to exert some influence over the epidemic, as it was not quite so prevalent during fine dry weather, as it was in rainy weather. And during the latter period, Catarrhal symptoms were more common & lung complications were apt to occur. The disease was not confined to any one class of society, but affected rich & poor alike, and thus I think points to the absence of any connection with insanitary conditions. Persons of all ages and both sexes were affected by it, and while sex did not in any way influence the rate of mortality, age did, the

very young and the very old
falling more easily victims to its
ravages.

Some epidemics have been followed
by, and been supposed to be connect-
ed with other epidemics, such as
Cholera. The present epidemic was
no exception to this rule and dur-
ing the last few months, there
have been quite a number of cases
of British Cholera, some of them
of a very severe type. In Sheffield
the epidemic has unfortunately
been followed by an outbreak of
Smallpox and Typhoid Fever.

Immediately previous to the
Influenza we had an epidemic of
Scarlet Fever in Rochdale.

As to the cause of the disease
I take it that the first cases we
saw were due to direct contagion
from persons coming from infect-
ed districts, and themselves already
suffering from the disease; and

that in the latter part of the epidemic some micro-organism in the air was the direct cause. This seems to me quite probable considering the sudden and widespread outbreak which occurred at the beginning of May, and which could not possibly be explained by direct contagion.

As patients did not die of Influenza except in those cases where there were complications no distinctive post mortem appearances could be made out.

The disease is supposed to be due to a Bacillus and in the Supplement of the British Medical Journal for September 19th 1891, Dr. G. Roux of Lyons reports the result of his researches on the Bacillus of Influenza. "In the blood of patients suffering from that disease a Streptococcus was found when the

"fever was at its highest point;"
 "in the urine on the other hand"
 "Diplobacilli were found. The author"
 "concludes that Influenza is probably"
 "caused by one polymorphous micro-"
 "organism which exhibits differ-"
 "ences in form in the various"
 "phases of the disease."

The period of incubation was as a
 rule short, usually extending from
 two days to about a week.

A prior attack did not seem to
 confer any immunity from sub-
 sequent epidemics, and indeed a
 large number of those who suffer-
 ed from the present epidemic,
 had previously had the disease
 in 1890.

At the end of June the epidemic
 ceased almost as suddenly as
 it began after having lasted for
 about 10 weeks.

In Quain's Dictionary of Medicine
 p 706. the late Dr. J. B. Peacock

in describing the epidemic of 1847 mentions three distinct classes of cases.

1. That in which it is simple; or unattended with any serious complications.
2. When it is complicated by serious affection of the aërial mucous membrane and especially with Bronchitis and Pneumonia.
3. That in which digestive disorders and rheumatic symptoms were more prominent.

The symptoms which occur in this last class were so constantly present in all cases of the disease during the present epidemic that there is no reason why it should be preserved as a distinct class.

The present epidemic varied much in its severity, but only two classes of cases need be differentiated.

1. Simple Influenza
2. Those cases in which complie-

ations occurred.

Symptoms.

The disease as a rule was remarkable for the sudden manner of its onset, but in some cases it was preceded by general malaise lasting for two or three days or longer. It usually began with a shivering & this was followed by alternate feelings of heat & cold. In children the disease was frequently ushered in by convulsions which were epileptiform in type & recurred during the first twenty-four hours; but these as a rule ceased under treatment by small doses of Powder of Potassium & Calomel purge. In one case in adult life — a male — the disease began in this way. After the shivering and when you had got the patient into bed he complained of intense pain in the head, and pains all over his body, which were rheumatic in character. I made

him feel as though he had been beaten all over the body with a stick. These rheumatic pains are not located in the joints, but shoot along the bones giving rise to much suffering and they frequently continue long after the disease has subsided. There is a throbbing sensation in the frontal & occipital regions and the head feels as though it were too full & would burst unless speedily relieved. This is accompanied by a considerable amount of giddiness, and in one case when the patient got out of bed it caused him to reel round till he fell to the floor.

The tongue is coated with a thin white fur which becomes thicker as the disease progresses. There is almost complete loss of appetite, frequently nausea and sometimes vomiting, the vomited matter having a bilious appearance. The bowels

as a rule were constipated, but in some cases there was diarrhoea. The skin was hot and dry till reaction had set in and then it became covered with perspiration. Thirst was frequently complained of, but not to the extent one would expect judging from the degree of fever present. The urine at first was scanty, high coloured, and deposited urates, but it contained no albumen.

The pulse which was increased in rate was generally full and bounding, but sometimes it was weak and accompanied by a tendency to fainting.

In some cases there was a dry spasmodic cough, which was violent and prolonged, but unaccompanied by expectoration.

The conjunctivae were frequently found congested, and this was accompanied by a considerable

degree of photophobia. In other cases there was an intense burning pain in the eyeballs, which gave rise to copious lachrymation, on attempting to read. Ecchymosis of the ocular conjunctiva was observed once or twice and was doubtless due to rupture of some capillary vessels, consequent on coughing.

The sense of taste was in most cases abolished, while in others there was a nasty taste in the mouth, the patient telling you that everything tasted like wood chips. The sense of smell was also frequently interfered with, but in no case was there any running at the nose, though sneezing was sometimes present. In some cases there was a feeling of constriction across the chest accompanied with more or less of soreness.

In two cases which came under my notice there was delirium which came on early in the disease, and resembled that which occurs in Typhus Fever. In one of these cases death occurred on the second day and the delirium was present to the end, but in the other case it was amenable to treatment by Rhinoids of Potassium in 20 grain doses repeated every four hours till the desired effect was produced, when she went off into a refreshing sleep and woke up much better.

The temperature as a rule was quite out of proportion to the rest of the disease, and was of no prognostic value. Often when called to see a patient the thermometer registered a temperature of $102^{\circ}7$. in the axilla, while your patient was

frequently up and about on the following day. On the first day of the disease the temperature was usually high ranging from 101°F to 103°F , sometimes being even as high as 105°F , but on the morning of the second day it often fell to nearly normal rising again about 1°F in the evening and continuing with morning remissions and evening exacerbations till the fourth or fifth day when as a rule it entirely disappeared and the patient was practically convalescent. During the day patients were extremely listless and did not seem to care to do anything, while at night sleeplessness was very frequently complained of.

Sore throat was sometimes present and indicated itself either by simple congestion of the fauces,

or by enlargement of the tonsils. One case was attended by deafness and intense pain in the left ear which lasted for about a week when the hearing again became quite normal.

Two cases occurred in pregnant women, one at an early period and the other at nearly full time. In both cases abortion threatened but was obviated by 3j doses of *Ik. Viburnum Prunifolium* repeated every three or four hours.

Some cases exhibited a bright ruddy rash chiefly confined to the neck & upper part of the chest, and in others there was a bright red flush over the malar prominences. These latter cases came to be looked upon as of bad prognosis from the fact that lung complications occurred in them more frequently than in other cases.

The convalescence was very protracted on account of the extreme prostration, and the patient complained much of inability for any exertion whatever, and remained very weak for a long time. The appetite also continued bad for some time. Indeed we know of no other disease lasting such a short time which leaves one in such an enfeebled condition.

Simple cases of Influenza were usually quite convalescent by the end of the first week, but where complications occurred the disease lasted from two to three weeks or longer.

Complications.

By far the most common complication was Acute Capillary Bronchitis, and as a rule it began early in the disease. It was accompanied by a very trouble-

some cough, which in most cases
 was almost incessant, giving rise
 to severe pain in the chest, and
 wearing out the strength of the
 patient very quickly. The cough
 was attended by very scanty ex-
 pectoration, which was thick
 and tenacious, yellowish in colour
 and very difficult to get up, only
 being got rid of after a very
 prolonged attack of coughing
 which left the patient quite
 exhausted. The skin was nor-
 mally moist with perspiration,
 and the breathing which at
 first was not much affected
 became short and difficult
 causing the patient to sit up
 in bed. There was a feeling
 of tightness all over the chest.
 The pulse was increased in rate
 and was feeble. In the later stages
 of the disease the face assumed
 a dark livid colour. At first

the percussion note was very little altered, but as the disease progressed dulness became quite decided at both bases behind and sometimes even spread to the front of the chest, while on auscultation fine crepitant rales could be heard, and the respiratory murmur became very feeble. In those cases in which recovery took place there was a general improvement in all the symptoms. The breathing became easier, the expectoration was parted with more freely, the livid colour disappeared from the face, and the patient could lie down in bed.

Where a fatal issue was the result all the symptoms became aggravated. The livid colour of the face was increased, and the expectoration ceased completely, the lungs becoming choked

up with mucus, and on auscultation large mucous râles could be heard all over the chest.

In four cases which came under my notice this complication ended fatally, and these all occurred in persons over 60 years of age. Pneumonia & Pleurisy also occurred as complications of Influenza and were very frequently combined. Those cases in which they occurred came to be looked upon as the worst of all our cases, because they almost all ended fatally and that despite all treatment. The disease began very insidiously and the first symptom was pain in the side, limited to a spot, which however varied greatly in severity. In some cases the complication seemed to set with a rigor. The respiration became shallow

and hurried, about 50 per minute, the temperature rose to 102°F — 105°F ; and the pulse rate was increased to 110-120 per minute. The face assumed a dusky red colour. The tongue was thickly coated in the centre, whilst the tip and edges were dry and brown, and the lips were covered with scales. Persistent vomiting and hiccup frequently occurred and often proved very distressing. On auscultation nothing abnormal could be heard during the first twenty four hours. This was succeeded by fine crepitation, a friction sound and latterly by consolidation. Then the percussion became dull and there was bronchial breathing and bronchophony. The expectoration was thick and tenacious, and of a rusty brown colour, while at times it was streaked with

bright red blood.

At first only one lung was affected, usually the left, but subsequently the other lung frequently became implicated also.

In all I saw seven cases of this complication, and in six it proved fatal — one died on the second day, four on the fourth day and another on the eighth day. The only case which recovered was that of a female about 30 years of age. The fatal cases all occurred in those who were just in the prime of life.

Rheumatism sometimes occurred as a complication and in such cases the pains became confined to the joints. In no case was there any Pericarditis.

Cardiac complications also occurred and were indicated by cyanosis, swelling of the feet & legs, Scanty, albuminous urine, and a murmur

which however disappeared.

Prognosis

In cases of simple uncomplicated Influenza the prognosis was always good; but where lung complications occurred it was decidedly bad and especially in those who were already the subjects of Cardiac or Respiratory diseases, or who were very young in years or advanced in age. Any enfeebled state of the constitution also rendered the prognosis more unfavourable;

Treatment.

Prophylactic treatment was of no use. Many persons believing Quinine to be a prophylactic took it regularly from the first occurrence of the epidemic, but they were quite as likely as others to be affected by the disease. The first step in the treatment of Influenza was to get your

patient to bed. He was less liable to catch cold than and so pulmonary complications could be averted. In those cases in which pulmonary complications did occur there was always a history of having caught cold during the early stage of the disease. In the milder forms of the disease it was sufficient to confine the patient to the couch instead of sending him to bed.

The most clamant symptoms were the intense headache, and the pains in the limbs, and these as a rule could be relieved by 10 gr. doses of Salicylate of Soda repeated every two hours for twenty-four hours, or by similar doses of Antipyrin given in the same manner.

In those cases in which pain in the chest and cough were present a mixture containing Sig. Ammon

Acetatis, Vin. Ipecac, Glycerine and
Spr. Amoniac. Aromat. was prescribed
along with the application of a
mustard plaster to the chest.

Vomiting was frequently very trouble-
some and in such cases Bicarbonate
Sod. Cocaine Hydrochlor. and Acid
Hydrocyanic were ordered in com-
bination. Thirst could be re-
lieved by Lemonade, Soda-Water,
Tea, Toast-water &c and when
the bowels were constipated a
dose of Calomel at the beginning
of the attack usually had the
desired effect.

When Bronchitis occurred a fe-
brile mixture combined with a
stimulating expectorant was usually
prescribed. Expectoration was
sometimes difficult although aus-
cultation revealed the presence of
a large quantity of mucus in the
lungs, and in such cases an-
tiseptic was often followed by

the best results. The cough which was paroxysmal in its nature was treated with Chloral and Belladonna or Hydrobromic Acid. On the occurrence of Pneumonia blisters were resorted to at once, and a mixture containing Carbonate of Ammonium was given, while the pyrexia was reduced by Quinine.

For the sore throat which sometimes occurred hot fomentations and steam inhalations were resorted to. The appetite being almost gone the patient could not be induced to partake of solid food, and in these cases, hot milk, beef tea and nourishing soups were ordered. Owing to the great prostration stimulating treatment was called for in all cases and depletory measures were on no account to be had recourse to. When pulmonary complications

occurred the exhibition of Stimulants was indicated early in the disease, and whiskey was usually ordered in tablespoonful doses three times a day or oftener. Stimulants were frequently called for during convalescences.

The cases, in which you could get your patient to take plenty of nourishment, were those in which the convalescence was most speedy. After the fever had disappeared tonics such as Quinine or Ammonia & Bark were indicated but despite all treatment convalescence was an extremely slow process, and patients remained for a long time in a very enfeebled condition.

A change of air was in many cases very beneficial.

Sleeplessness was very frequently complained of, and for this 15gr. doses of Sulphonal were ordered.

Effect of Influenza on the Death rate.

This will be best seen by comparing the reports of the Medical Officer of Health for the Borough for the second quarter in the year 1890 and 1891.

I. Report for Quarter ending June 30. 1890.

The deaths registered during the quarter were 319 — males 169, females 150 — equal to an annual rate of 17.3 per 1,000 of the population, whilst the same rate for England and Wales was 17.5, the twenty-eight largest towns 19.0, the fifty next largest 17.9 and Lancashire 20.4.

109 deaths occurred among children under five years, and of these 67 died under the age of one year, 80 died at or over the age of sixty. The deaths from Respiratory Diseases, including Phthisis, numbered 110. 34 were due to Pulmonary

Consumption, and the remainder to the more acute lung affections. Of the more acute lung affections 23 died under the age of five years and 24 at or over the age of sixty.

During the Quarter 99 cases of Infectious Diseases were reported at the Health Office resulting in 23 deaths.

The seven principal Zymotic Diseases caused 20 deaths, equal to an annual rate of 1.08 per 1,000.

II. Report for Quarter ending June 30. 1891.

The deaths registered during the Quarter were 539 or 220 more than the corresponding quarter of last year - males 295, females 243 - equal to an annual rate of 20.1 per 1,000 of the population while the same rate for the whole of England and Wales was 23.7, the twenty eight largest towns 26.2,

the fifty next largest 24.1 and Lancashire 29.2.

153 deaths occurred among children under five years of age or 44 more than the corresponding quarter of last year. Of these 83 died under the age of one year and the remaining 70 between one and five. 166 died at or over the age of fifty.

The deaths from Respiratory Diseases including Phthisis numbered 172 or 62 more than the same quarter of last year. The excess consists chiefly of deaths from Bronchitis & Pneumonia. 32 were due to Pulmonary Consumption, and the remainder to the more acute lung affections. Of the more acute lung affections 43 died under the age of five and 48 at or over fifty. There were 53 deaths resulted from Influenza. During the quarter 63 cases

of Infectious Diseases were reported at the Health Office.

The seven principal Zymotic Diseases caused 17 deaths equal to an annual rate of 0.95 per 1,000; the same rate for England & Wales 1.71, the twenty-eight largest towns 2.11, and the fifty next largest 2.20.

From the above reports the following facts may be noted:—

1. The rate of mortality was largely increased and chiefly among those under five or over sixty years of age. In the latter case the advance was greatest the rate being more than doubled.
2. The death rate from the Respiratory diseases on the whole is greatly increased, while the deaths from Phthisis are decreased in number.
3. The deaths from the Specific Fevers and Zymotic Diseases

are both fewer in number than is usually the case. In this respect the epidemic of 1891 differs from that of 1847 in which the death rate from these diseases was increased, and O'Peacock states that during epidemics of Influenza there is always an unusual prevalence of Infectious Diseases.

Dr. Gardner on the other hand in recording the epidemic of 1857 most decidedly shows that the rate of mortality from these diseases was quite under the average.
